# Why Never Forgetting a Face Matters: Visual Imagery and Social Memory

## William B. Swann, Jr., and Lynn Carol Miller
### University of Texas at Austin

This research tested the hypothesis that individuals who tend to form vivid visual images of others (vivid imagers) have more accurate social memories than those who form relatively nonvivid visual images of others (nonvivid imagers). In the first investigation, vivid imagers outperformed nonvivid imagers in remembering details concerning the attitudes, activities, and life history of a woman whom they observed being interviewed. Investigation 2 provided more definitive evidence for the link between visual imagery and social memory by demonstrating that vivid imagers had more accurate memories after seeing an interviewee answer questions, whereas seeing the interviewee had no impact on the memories of nonvivid imagers. The discussion considers the impact that imagery processes may have on a variety of social thought processes.

Remembering facts about other people can often be exasperating. Consider, for example, the dismay of the dinner hostess who recalls that her guests are vegetarians just as she serves a roast, or the consternation of the would-be Don Juan who infuriates his date by referring to her by the wrong name. Perhaps what is most distressing for those whose memories fail them is the realization that theirs is not a universal affliction. For in social memory, as in most endeavors, some people are better than others. In this paper, we propose that one factor that may underlie such individual differences in social memory is visual imagery.

Although the notion that visual images may aid memory has considerable historical precedent, it is only recently that cognitive psychologists have systematically examined the impact of imagery on memory. There is now ample evidence that visual images can serve as powerful memory aids (e.g., Bower, 1972; Kosslyn & Pomerantz, 1977; Paivio, 1971). Of greatest relevance here are studies that indicate that there are important individual differences in imagery, differences that are systematically associated with performance in memory tasks (e.g., Delaney, 1978; Finke, 1980; Finke & Kosslyn, 1980; Gur & Hilgaard, 1975; Marks, 1973). These studies offer converging evidence that individuals who form highly vivid and clear visual images are superior in remembering information about the physical appearance of objects.

Still, as interesting and compelling as these investigations of individual differences in imagery may be, they say very little about the role of imagery in social memory. In each of these studies, participants sought to remember relatively simple and uninvolving information under conditions that were devoid of the richness and complexity of everyday social interaction. Further, although the research literature suggests that vivid imagers possess an advantage in remembering information about the *physical appearance* of objects, there is some evidence that this advantage may not extend to tasks that require the retrieval of *conceptual information* (e.g., Slee, 1980). Hence, vivid imagers may better remember what their interaction partners look like but not what they say and do. If individual differences in imagery are to have any major significance for personality and social psychologists, it is important to show that vivid imagers can out-

perform nonvivid imagers in remembering information about the relatively less tangible, nonphysical attributes of the people they encounter as well as information about physical appearances.

How might visual imagery help people remember facts about the individuals they encounter? There are at least three potentially overlapping ways in which this could come about. A visual image of someone might serve as a way of organizing incoming information about that person. Alternatively, possessing a visual image of someone might motivate people to process information about that individual more thoroughly and completely (cf. Craik & Lockhart, 1972). Finally, a visual image might provide people with a cue that will later help them retrieve information about the target individual from memory. Each of these three processes would tend to insure that vivid imagers outperform nonvivid imagers on social memory tasks.

## Investigation 1

The initial investigation assessed the relationship between individual differences in visual imagery and the ability to recall information about others. Individuals whose scores on Marks's (1973) Vividness of Visual Imagery Scale were relatively high (vivid imagers) or low (nonvivid imagers) watched a videotape of a woman being interviewed. All participants then completed a recognition memory test that indexed their ability to accurately remember information about the background, attitudes, and preferences of the respondent in the interview. We expected that vivid imagers would more accurately remember details about the respondent than nonvivid imagers.

### Method

#### Participants

In partial fulfillment of a course requirement, 103 male and 83 female undergraduates at the University of Texas at Austin participated in this study in groups of 15–25 people.

#### Procedure

*The measure of visual imagery.* Upon arrival, each participant completed a booklet of several questionnaires. Embedded in the booklet was the Marks (1973)

*Vividness of Visual Imagery Scale.* To complete this scale, individuals imagined a series of four images (a shop, a familiar relative or friend, a rising sun, and a country scene) and noted the vividness of various features of each image (e.g., the window display in the shop, the color of the door at the shop). There were 4 questions pertaining to each image, yielding a total of 16 questions. Participants rated the vividness of each image by completing a scale ranging from 1 ("no image present at all, you only know that you are thinking of the object") to 5 ("perfectly clear and as vivid as the actual experience"). The theoretical range of the scale was 16–80. Those who scored above the median (49.5) on this scale were designated *vivid imagers*; those who scored below the median were designated *nonvivid imagers.*

*The videotaped interview.* A female undergraduate student served as the respondent in the interview. During the interview, she answered a series of open-ended questions concerning her feelings about life at the university, her career goals, her family, and her nonacademic interests. Throughout the entire 10-minute interview, the camera remained on the respondent's face and upper torso; the interviewer, a female graduate student, remained off camera.

*The measure of recognition memory.* After watching the videotape, participants completed a test of their ability to identify the statements that the respondent did and did not make during the interview. Some of the statements dealt with the respondents' attitudes and feelings (e.g., "I really like guys with curly dark hair." or "I don't find it hard to talk to strangers."). Others pertained to her favorite activities (e.g., "I really like people and I like meeting people." or "I like having time to be by myself."). Still others referred to some personal attribute (e.g., "I'm not particularly inhibited with people in authority." or "I'm pretty much at ease around most people."). None of the items referred to physical characteristics of the respondent. Participants read each statement and indicated their confidence that the respondent made it during the interview on 5-point scales ranging from 1 ("extremely confident that she did not say this") to 5 ("extremely confident that she did say this"). Of the 28 statements in the test, half were actually made during the interview (actual statements); half were not made during the interview (distractor statements). After completing this measure, participants were debriefed, thanked, and excused.

### Results and Discussion

Were vivid imagers superior to nonvivid imagers in remembering information about the life history and preferences of the respondent in the interview? To address this issue, we first reverse-coded scores on the distractor items to insure that higher scores denoted greater accuracy for the distractor as well as the actual items. We then constructed an accuracy index for each participant by adding participant's rated confidence on the actual and distractor state-

ments (with the reverse coding, these scores reflected confidence that the actual statements were made plus confidence that the distractor statements were *not* made). Responses to different items within this index were closely related to one another; the coefficient alpha was .79.

We expected that vivid imagers would score higher on the accuracy index than nonvivid imagers. This was the case. An analysis of variance (ANOVA) of these accuracy scores indicated that vivid imagers ($M =$ 113.52) more accurately recalled the respondent's statements than nonvivid imagers ($M = 109.16$), $F(1, 183) = 6.78, p < .01$.[1] Moreover, inspection of the separate components of this accuracy index revealed that vivid imagers were considerably better than nonvivid imagers in accurately identifying the respondents' actual statements, $F(1, 183) = 15.056, p < .001$, but that vivid imagers were only slightly better in accurately identifying the distractor statements, $F < 1$.

These data suggest that vivid imagers have a distinct advantage over their nonvivid imager counterparts in the domain of social memory. Nevertheless, although it is clear that vivid imagers outperformed nonvivid imagers on the social memory test, the precise mediators of this effect remain unclear. Although our theoretical analysis would suggest that participants' imagery processes produced their recognition performances, it could be that other factors were at work. One possibility might be that vivid imagers are more intelligent or verbally facile than nonvivid imagers. This seems unlikely given that scores on Marks's scale are uncorrelated with scores on measures of verbal and analytical ability (e.g., McKelvie & Rohrberg, 1978). More difficult to dismiss is the possibility that the superior memories of vivid imagers reflected their eagerness to excel or their greater attentiveness. To diminish the plausibility of this alternative interpretation and similar ones, we conducted a second study.

## Investigation 2

One purpose of the second investigation was to provide clear evidence that the superior social memories of vivid imagers are mediated by individual differences in imagery rather than some covariate of imagery. In addition, this study was intended to identify the conditions under which vivid imagers would and would not outperform nonvivid imagers on social memory tasks. In light of past research indicating that vividness of imagery scores do not predict ability to generate images (e.g., McKelvie & Rohrberg, 1978; McLemore, 1976; Richardson, 1977), we reasoned that the exceptional social memories of vivid imagers displayed in Investigation 1 must have reflected their facility in using visual stimuli in encoding and/or retrieving factual information about the interviewee. From this we deduced that it should be possible to handicap vivid imagers by not allowing them to see the interview respondent.

Accordingly, in this study we had vivid and nonvivid imagers listen to a tape recorded interview under one of two conditions. In the picture condition, participants could both see and listen to the respondent, as in Investigation 1. In the no-picture condition, participants could only hear the respondent. We anticipated that having access to the videotape of the respondent would improve the memories of vivid imagers but would have no impact on the memories of nonvivid imagers.

### Method

#### Participants

Fifty-three males, 98 females, and 3 individuals who failed to record their gender participated in this study in partial fulfillment of a course requirement.

#### Procedure

All aspects of the procedure were identical to that used in Investigation 1, with the following exceptions. To bolster the generalizability of our findings, we had a different female undergraduate respondent answer a new set of questions concerning her personal background and attitudes. As in Investigation 1, some of the statements dealt with the respondent's attitudes and feelings (e.g., "I look for men who are dark and tall." or "I like to do things with other people."); others pertained to her favorite activities (e.g., "I like to play the guitar."

---

[1] Since preliminary analyses revealed that there were no reliable main or interactive effects of sex in either investigation, we deleted this variable from all analyses that are reported here.

Table 1

*Investigation 2: Accuracy of Social Memory as a Function of Vividness of Visual Imagery and Picture Availability*

| Imagery scores | Picture availability | |
|---|---|---|
| | Picture | No picture |
| Vivid imagers | | |
| M | 63.80 | 59.95 |
| SD | 5.54 | 10.11 |
| n | 45 | 37 |
| Nonvivid imagers | | |
| M | 61.41 | 62.74 |
| SD | 5.52 | 4.60 |
| n | 41 | 31 |

*Note.* Higher means indicate greater accuracy.

or "I like tennis and jogging."); still others referred to some personal attribute (e.g., "I'm pretty content with what I have." or "I have a boyfriend who's studying medicine."). As in the first study, the interview was videotaped. In the picture conditions, participants could watch the respondent during the interview; in the no-picture conditions, the monitor was turned off so that the respondent's face could not be seen. After watching the interview, all participants completed a recognition memory test that was identical in all respects to that used in Investigation 1 except that this test contained fewer items (14).

After the data collection phase of this study, a team of 64 undergraduate judges read the recognition items and rated the ease with which they could form a related visual image of each one on scales ranging from 1 (extremely easy) to 5 (extremely difficult). These ratings allowed us to identify four items that a majority of the judges classified as high in imageability and four items that were thought to be relatively low in imageability.

### Results and Discussion

To assess the accuracy of participants' social memories, we computed an accuracy index as in Investigation 1 (with a coefficient alpha of .75) and entered these scores into a 2 (vivid imagers, nonvivid imagers) × 2 (picture, no picture) least squares ANOVA. We expected that having access to the picture of the respondent would improve the memories of vivid imagers but would have no impact on the memories of nonvivid imagers. Just such a pattern of data emerged. There was a reliable interaction between the imagery and picture variables, $F(1, 150) = 5.63$, $p = .019$. As can be seen in Table 1, vivid imagers remembered details about the respondent more accurately in the picture as compared to no-picture conditions, $F(1, 150) = 6.68$, $p < .01$. In contrast, nonvivid imagers did not benefit from having the picture made available to them, $F < 1$. Furthermore, inspection of the separate components of the accuracy index indicated that the interaction between imagery and picture was reliable for both the actual statements, $F(1, 150) = 4.15$, $p = .043$, and distractor statements, $F(1, 150) = 4.00$, $p = .045.$[2]

Additional analyses indicated that the tendency of the picture to improve the social memories of vivid imagers was more pronounced for statements that were highly imageable as compared to those that were less imageable. Thus, whereas highly imageable items were remembered more accurately by vivid imagers in the picture as compared to the no-picture condition, $F(1, 80) = 6.36$, $p < .01$, the difficult-to-image items were not better remembered by vivid imagers in the picture as compared to no-picture conditions, $F < 1$.

These data support our contention that the relatively superior social memories of vivid imagers reside in their capacity for visual imagery rather than some covariate of imagery. Whereas vivid imagers profited from having access to the raw materials for forming an image (a picture), nonvivid imagers gained little from having the picture available to them. Further, this was especially true for highly imageable information.

### General Discussion

Since the Greek poet Simonides introduced the method of loci, people have recognized the value of imagery in memory. Over the years, social scientists have gathered considerable evidence that imagery helps people recall information about the physical world. Our findings go one step beyond this research by showing that imagery may aid people in yet another domain: their social interactions.

In Investigation 1, we found that vivid imagers remembered facts about an individual they had encountered more accurately than

---

[2] Further analyses of the accuracy index scores indicated that there was also a statistically reliable difference betweeen vivid and nonvivid imagers in the picture-present conditions, $t(84) = 2.05$, $p < .05$, thereby replicating the major finding of Investigation 1.

nonvivid imagers. The second study provided more definitive evidence for the link between imagery and social memory by showing that the availability of a visual stimulus sharpened the memories of vivid imagers but not nonvivid imagers.

These findings extend previous research on imagery in several ways. Although previous investigations have suggested that the advantage of vivid imagers over nonvivid imagers on memory tasks may be limited to appearance information (e.g., Slee, 1980), our data argue that vivid imagers may be relatively facile in recalling conceptual information as well. Thus, in both of our investigations, vivid imagers recalled information concerning the attitudes, values, and life history of a respondent in an interview more accurately than nonvivid imagers. Further, our research indicates that the beneficial effects of imagery may not be limited to the relatively artificial situations in which the bulk of earlier imagery research has been conducted (for a review, see Paivio, 1971) but may extend to contexts as rich and complex as those that people encounter in their everyday social interactions.

Still, as helpful as imagery processes may be in some contexts for some people, it is clear that they will not always be so useful. In line with previous research (e.g., McKelvie & Rohrberg, 1978), our data indicate that those who are prone to form vivid images are not necessarily adept in *generating* images. Consequently, vivid imagers will remember information about others better only when they have access to the raw materials for forming an image, such as a videotape or picture. This suggests that vivid imagers will *not* possess an edge in remembering information about themselves, because as Lord (1980) has recently argued, it is relatively rare that people have visual *representations of themselves available.*

One implication of our findings and other recent research is that although the visual and semantic knowledge systems may be unique and distinctive (e.g., Bower, 1972; Kosslyn, 1981; Paivio, 1971), they may nevertheless be quite interdependent. Whereas our data indicate that visual information may influence *how* accurately people remember facts about others, there is some less direct but equally intriguing evidence that

visual information may systematically channel the nature of the inferences people make about other individuals. Taylor and Fiske (1978), for example, have catalogued a number of studies that demonstrate that observers are apt to see perceptually salient individuals as being relatively more responsible for the outcome of the interactions in which they engage. Presumably, the vivid images observers form of perceptually salient individuals translate into highly elaborate memories that, in turn, influence subsequent inference processes.

There is also some evidence that vividly presented information tends to have more impact on judgments than nonvividly presented information (e.g., Borgida & Nisbett, 1977). However, Taylor and Thompson (1982) have recently shown that the evidence for this effect is rather weak and inconsistent. The results of our second investigation suggest why this might be so. That is, our data suggest that only vivid imagers—those who possess the requisite cognitive and/or motivational structures to use visual information as a memory aid—will be sensitive to information vividness. Individuals who lack these qualities will tend to be unaffected by information vividness. This implies that vivid information may indeed have relatively strong effects on social judgments—but only for *some people,* that is, vivid imagers (for a related discussion, see Taylor & Thompson, 1982).

Clearly, there is growing empirical evidence that visual imagery plays an important role in social cognition and social interaction. Partly in response to this work, theorists are beginning to incorporate imagery processes into their models of social inference processes (e.g., Abelson, 1976). The message emerging from this work and our own research is clear: While there may be more to social cognition than meets the eye, what meets the eye may be just as important and influential.

## References

Abelson, R. P. A script theory of understanding, attitude and behavior. In J. Carroll & T. Payne (Eds.), *Cognition and social behavior.* Hillsdale, N.J.: Erlbaum, 1976.

Borgida, E., & Nisbett, R. E. The differential impact of abstract vs. concrete information on decisions.

*Journal of Applied Social Psychology*, 1977, *7*, 258–271.

Bower, G. H. Mental imagery and associative learning. In L. Gregg (Ed.), *Cognition in learning and memory.* New York: Wiley, 1972.

Craik, F. I. M., & Lockhart, R. S. Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior*, 1972, *11*, 671–684.

Delaney, H. D. Interaction of individual differences with visual and verbal elaboration instructions. *Journal of Educational Psychology*, 1978, *70*, 306–318.

Finke, R. A. Levels of equivalence in imagery and perception. *Psychological Review*, 1980, *87*, 113–132.

Finke, R. A., & Kosslyn, S. M. Mental imagery acuity in the peripheral visual field. *Journal of Experimental Psychology: Human Perception and Performance*, 1980, *6*, 126–139.

Gur, R. C., & Hilgaard, E. R. Visual imagery and the discrimination of differences between altered pictures simultaneously and successively presented. *British Journal of Psychology*, 1975, *66*, 341–345.

Kosslyn, S. M. The medium and the message in mental imagery: A theory. *Psychological Review*, 1981, *88*, 46–66.

Kosslyn, S. M., & Pomerantz, J. R. Imagery, propositions, and the form of internal representations. *Cognitive Psychology*, 1977, *9*, 52–76.

Lord, C. G. Schemas and images as memory aids: Two modes of processing social information. *Journal of Personality and Social Psychology*, 1980, *38*, 257–269.

Marks, D. F. Visual imagery differences in the recall of pictures. *British Journal of Psychology*, 1973, *64*, 17–24.

McKelvie, S. J., & Rohrberg, M. M. Individual differences in reported visual imagery and cognitive performance. *Perceptual and Motor Skills*, 1978, *46*, 451–458.

McLemore, C. W. Factorial validity of imagery measures. *Behavioral Research and Therapy*, 1976, *14*, 399–408.

Paivio, A. *Imagery and verbal processes.* New York: Holt, Rinehart & Winston, 1971.

Richardson, A. The meaning and measurement of mental imagery. *British Journal of Psychology*, 1977, *68*, 29–43.

Slee, J. A. Individual differences in visual imagery ability and retrieval of visual appearances. *Journal of Mental Imagery*, 1980, *4*, 93–113.

Taylor, S. E., & Fiske, S. T. Salience, attention, attribution: Top of the head phenomena. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, (Vol. 11). New York: Academic Press, 1978.

Taylor, S. E., & Thompson, S. C. Stalking the elusive "vividness" effect. *Psychological Review*, 1982, *89*, 155–181.

## Manuscripts Accepted for Publication in the Section Attitudes and Social Cognition

Avoiding Artifact in the Search for Bias: A Reply to Carlston and Cohen. James Carlopio, John G. Adair (Department of Psychology, University of Manitoba, Winnepeg R3T 2N2, Canada) and R. C. L. Lindsay.

Attraction in Aversive Environments: Some Evidence for Classical Conditioning and Negative Reinforcement. Catherine Riordan (Department of Social Sciences, University of Missouri, Rolla, Missouri 65401) and James T. Tedeschi.

Understanding the Meaning of Achievement Attributions: A Test of Derived Locus and Stability Scores. David L. Ronis, Ranald D. Hansen (Department of Psychology, Oakland University, Rochester, Michigan 48063) and Virginia E. O'Leary.

Gender Identity: Benefits of the Sex Schema Approach. Marie Crane and Hazel Markus (Research Center for Group Dynamics, Institute for Social Research, University of Michigan, Ann Arbor, Michigan 48106).

The Effects of Own Attitudes Upon Attributions of Attitudes to Others. Daniel Romer (Department of Psychology, University of Illinois—Chicago Circle, Box 4348, Chicago, Illinois 60680).

Predicting and Understanding Mothers' Infant Feeding Intentions and Behavior. A. S. R. Manstead (Department of Psychology, University of Manchester, Manchester M13 9PL, England).

The Effects of Attributions on Perceptions of the Attributor: Are Self-Serving Attributions Really Self-Serving? Nicollette Shovar and Donal Carlston (Department of Psychology, Spence Laboratories of Psychology, University of Iowa, Iowa City, Iowa 52242).

The Influence of Affect and Familiarity on Memory for Personality Relevant Information. Tamara J. Ferguson, Brendan G. Rule (Department of Psychology, University of Alberta, Edmonton, Alberta T6G 2E9, Canada) and Dona R. Carlson.